Chapter 12
IS-Supported Managerial Control for China's Research Community:
An Agency Theory Perspective

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ABSTRACT

In the first decade of the 21st century, China's Research Community (CRC) is struggling to achieve better performance by increasing growth in knowledge quantity (e.g., publications), but has failed to generate sound growth in knowledge quality (e.g., citations). An innovative E-government project, Internet-based Science Information System (ISIS), was applied nationwide in 2003 with a variety of embedded incentives. The system has been well received and supports the National Natural Science Foundation of China (NSFC) to implement managerial control to cope with pressing demands relating to China's research productivity. This paper explores the impact of Information Systems (IS) from the perspective of agency theory based on CRC empirical results. Since the nationwide application of ISIS in 2003, CRC outcomes have markedly improved. The discussion and directions for future research examine implications of IS for E-government implementation and business environment building in developing countries.

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INTRODUCTION

Both success and failure of E-government cases in developing countries are reported in the literature (Heeks, 2002; Ndou, 2004). Among various factors addressed by scholars from different perspectives, mentioned in common is that the interests or goals of multiple stakeholders related to E-government projects should be given attention in keeping with results of E-government cases (Dada, 2006; Gil-Garcia et al., 2007; Heeks, 2002; Krishna & Walsham, 2005; Ndou, 2004). Consequently, one of the underpinning challenges to governance systems is to encapsulate the simultaneous demand for both stakeholder control and cooperation in organizational transformation brought about by E-government implementations (Tan et al., 2005). In certain areas such as healthcare, studies using empirical data from developed countries have shown that information systems (IS) can be leveraged as enablers to achieve goal alignment among different stakeholders when they are in a principal-agent (P-A) relationship (Wickramasinghe, 2000; Wickramasinghe & Silvers, 2003). Nevertheless, there is a deficiency in the literature addressing how IS could support governance endeavours when stakeholders are in principal-agent relationships in developing countries, particularly in China (Walsham et al., 2007; Walsham & Sahay, 2006).

As China's economy has enjoyed sustained and rapid growth since the mid 1990's, R&D funding has experienced annual growth, and government fiscal appropriations for Science & Technology (S&T) have increased steadily (Zhu & Gong, 2008). However, certain problems have drawn considerable global attention. For instance, concerns about misconduct (e.g., fraud and plagiarism) in the Chinese Research Community (CRC) have been reported by Nature (Cyranoski, 2006; Wang, 2006) and Science magazine (Xin, 2006); a significant contrast has appeared between the rapid increase in the number of scientific papers (e.g., the rank of China in Scientific Citation Index (SCI) counts) and the slow development in terms of quality (e.g., the rank in Essential Science Indicators) and international influence of scientific papers (e.g., citations) (Jin, 2004). The pressing demands for China's research productivity have become one of the major driving factors for policy makers to look for innovative solutions so that China's basic research community can be reoriented toward high output, high quality, and high efficiency (Zhu & Gong, 2008). On such occasions, China's R&D related government agencies play the role of principals who are looking for a portfolio of agents capable of realizing the goal to perform high quality research.

As one of the main channels for funding basic research, the National Natural Science Foundation of China (NSFC) (see Appendix A) has placed continuous emphasis on innovation in E-government implementation to effectively and efficiently encourage sustained research and contribution to globally recognized literature. The Internet-based Science Information System (ISIS) [https://isis.nsfc.gov.cn], embedded nationwide in 2003, now annually manages qualified peer reviews, sharing of information and openness for critique, which in 2009 culminated in research funding distribution for over 97,755 grant submissions (NSFC, 2009c) with an annual increase rate of over 15%. Prior to ISIS, incentives in place did not produce desired results. It is with this application of ISIS that research quality improvement has attracted our attention.

Although there are many contributors to communities' research productivity, such as institutional, financial, manpower, technological and cultural factors (Bland & Ruffin Iv, 1992; Heinze et al., 2009), this paper focuses on the aspect of institutional factors introduced by a nationwide information system that contributes to the quality enhancement of research output. Taking an agency theory perspective in the context of ISIS's implementation for CRC, we explore how ISIS, as an E-government practice, influences goal alignment that gradually supports academic achievement and global recognition. Previous